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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,189	02/13/2004	Shigetoshi Wakayama	042107	8258
38834	7590	05/19/2005	EXAMINER	
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036			PHAM, HOAI V	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/777,189	WAKAYAMA ET AL.	
	Examiner	Art Unit	
	Hoai v. Pham	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-15 is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2/13/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Umematsu et al. [U.S. Pat. 6,399,897].

With respect to claim 1, Umematsu et al. (fig. 5B, col. 5) discloses a semiconductor device, comprising:

substrate (12); and

a multilayer interconnection structure formed on said substrate, said multilayer interconnection structure comprising:

a first guard ring (58a) extending continuously in said multilayer interconnection structure along periphery (50) of said substrate; and

a second guard ring (58a) extending continuously in said multilayer interconnection structure along said periphery so as to be encircled by said first guard ring, said second guard ring encircling an interconnection pattern inside said multilayer interconnection structure;

said first and second guard rings (58a) being connected with each other mechanically and continuously by a bridging conductor pattern (56a) extending

continuously in a band form along a region including said first and second guard rings, when viewed in the direction perpendicular to said substrate.

With respect to claim 2, Umematsu et al. discloses that wherein said bridging conductor pattern (56a) does not have any of a gap or an opening (fig. 5B).

With respect to claim 3, Umematsu et al. discloses that wherein said bridging conductor pattern (56a) is provided at plural different positions having different heights as measured from a surface of said substrate (fig. 5B).

With respect to claim 4, Umematsu et al. discloses that wherein said bridging conductor pattern (56a) is formed in one or more interlayer insulation films (49a-49i) in said multilayer interconnection structure.

With respect to claim 6, Umematsu et al. discloses that wherein said multilayer interconnection structure has a layered structure in which a plurality of interlayer insulation films (49a-49i) each including an interconnection layer corresponding thereto are stacked, and wherein an interconnection layer formed in one interlayer insulation film of said plural interlayer insulation films is connected to an underlying interconnection layer by a via-plug (58, 58a), each of said first and second guard rings having a layered structure identical to that of said multilayer interconnection structure, said bridging conductor pattern being formed at a height identical to that of the

interconnection layer in said interlayer insulation film in which said bridging conductor pattern is formed (see fig. 5b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Umematsu et al. [U.S. Pat. 6,399,897] in view of Usi [U.S. 2005/0082577]. Umematsu et al. discloses that wherein said bridging conductor pattern (56a) is formed in one or more interlayer insulation films (49a-49i) in said multilayer interconnection structure. Umematsu et al. does not disclose wherein said bridging conductor pattern (56a) is provided in all of said interlayer insulation films in said multilayer

interconnection structure. However, Usi discloses that wherein said bridging conductor pattern (22) is provided in all of said interlayer insulation films (15, 17) in said multilayer interconnection structure (see fig. 6, paragraph [0048] to [0054]). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the bridging conductor pattern provided in all of said interlayer insulation films in said multilayer interconnection structure because both device of Umematsu et al. (col. 1, lines 57-62) and Usi (paragraph [0012]) provide the same purpose of preventing outside moisture invading the wiring regions.

Allowable Subject Matter

6. Claims 7-15 are allowed.

7. The following is an examiner's statement of reasons for allowance: the prior of record fails to disclose the combination of a semiconductor device structure recited in the base claim 7, including the combination of the structure comprising: a bridging conductor pattern extending in said second multilayer interconnection structure over a band form region continuously, said bridging conductor pattern mechanically connecting said first and second guard rings with each other; and a third guard ring formed on said bridging conductor pattern.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai v. Pham whose telephone number is 571-272-1715. The examiner can normally be reached on M-F.
9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.
10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


**HOAI PHAM
PRIMARY EXAMINER**